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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,356	10/24/2003	Shlomo Assa	06155-113001	2723

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EXAMINER	
PHAM, HAI CHI	
ART UNIT	PAPER NUMBER
2861	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/693,356	ASSA ET AL.	
	Examiner	Art Unit	
	Hai C. Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 17-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 17-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 20-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20:

- The following limitation "varying the angle of reflection of the second reflected light beam between 45 and 90 degrees, exclusive of 45 and 90 degrees" (emphasis added) appears to be misleading since the angle of reflection of the second reflected light beam is required to vary by an angle less than 10 degrees. Apparently, Applicant is confused with the starting angle of reflection, which is required to be between 45 and 90 degrees. For the completion of the examination, the claimed limitation will be treated similar to the limitation recited in claim 11, where the angle of reflection of the second reflected light beam is varied by less than 10 degrees.

Claim 21:

- The following limitation "varying the angle of reflection of the first reflected light beam between 45 and 90 degrees, exclusive of 45 and 90 degrees" (emphasis added) appears to be misleading since the angle of reflection of the first reflected

light beam is required to vary by an angle less than 10 degrees. Apparently, Applicant is confused with the starting angle of reflection, which is required to be between 45 and 90 degrees. For the completion of the examination, the claimed limitation will be treated similar to the limitation recited in claim 10, where the angle of reflection of the first reflected light beam is varied by less than 10 degrees.

Claim 22:

- The following limitation "vary the angle of reflection of the first reflected light beam through a range of angles greater than 45 and less than 90 degrees" (emphasis added) appears to be misleading since the angle of reflection of the first reflected light beam is required to vary by an angle less than 10 degrees. Apparently, Applicant is confused with the starting angle of reflection, which is required to be between 45 and 90 degrees. For the completion of the examination, the claimed limitation will be treated similar to the limitation recited in claim 10, where the angle of reflection of the first reflected light beam is varied by less than 10 degrees.

Claim 23:

- The following limitation "vary the angle of reflection of the second reflected light beam through a range of angles greater than 45 and less than 90 degrees" (emphasis added) appears to be misleading since the angle of reflection of the second reflected light beam is required to vary by an angle less than 10 degrees. Apparently, Applicant is confused with the starting angle of reflection, which is

required to be between 45 and 90 degrees. For the completion of the examination, the claimed limitation will be treated similar to the limitation recited in claim 11, where the angle of reflection of the second reflected light beam is varied by less than 10 degrees.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-12, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (U.S. 6,066,829) in view of Oguri (JP 2001-66528).

With respect to claims 1, 3 and 19, Ishikawa discloses a laser marking system and method for printing a spot on an object, the method comprising reflecting an incident light beam (LM) by a starting angle to form a first reflected light beam (Fig. 3), varying the [starting] angle of reflection of the first reflected light beam by a pre-determined amount (by controllably rotating the first reflecting mirror 52 as shown by the double head arrow AA'), reflecting the first reflected light beam to form a second reflected beam (e.g., by reflecting the first reflected beam using the second reflecting mirror 54), varying the [starting] angle of reflection of the second reflected light beam (by controllably rotating the first reflecting mirror 54 as shown by the double head arrow

BB'), and directing the second reflected beam to form a spot on an object (the beam reflected by the second reflecting mirror 54 being directed toward the workpiece W).

With respect to claims 4 and 17-18, Ishikawa discloses a first mirror (52), a first actuator (X axis galvanometer 56) attached to the first mirror, a second mirror (54), a second actuator (Y axis galvanometer 58) attached to the second mirror, and a controller (control 38) coupled to the first and second actuators (via electric cables 62, 64), the controller controlling the first actuator to cause the first mirror to reflect an incident light beam by a starting angle of less than ninety degrees to form a first reflected light beam, the first actuator being operable to tilt the first mirror and vary the starting angle of reflection of the first reflected light beam by a predetermined amount, the controller controlling the second actuator to cause the second mirror to reflect the first reflected light beam to form a second reflected beam, the second mirror directing the second reflected beam to form a spot on an object, the second actuator being operable to tilt the second mirror and vary an angle of reflection of the second reflected light beam by a pre-determined amount (the respective swing angles of the first and second mirrors being predetermined by the X and Y-direction scanning control signals) (col. 7, lines 2-15).

However, Ishikawa fails to explicitly teach the starting angle of the first and second reflected light beams being less than ninety degrees or less than 60 degrees.

Oguri discloses a display device comprising a first optical deflection mirror (2a) and a second optical deflection mirror (2b) for deflecting a light beam emitted from a light source (1) in the horizontal and vertical directions to scan the screen whose aspect

ratio is 4:3 or 16:9, wherein the first optical deflection mirror reflects an incident light beam by a starting angle equal to or less than 88 degrees for the screen aspect ratio of 16:9 (the starting incident angle $\alpha \leq 44$ degrees and thus the starting reflection angle is $2\alpha \leq 88$ degrees), and by a starting angle equal to or less than 56 degrees for the screen aspect ratio of 4:3 (the starting incident angle $\alpha \leq 28$ degrees and thus the starting reflection angle is $2\alpha \leq 56$ degrees) (Fig. 2) (English translation [0025]). Oguri clearly teaches the required starting reflection angle being dependent from the screen area or surface area to be scanned by the light beam.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to control the starting reflection angle of the first and second reflected light beams by the respective first and second mirrors in the device of Ishikawa to be less than 90 or 60 degrees as taught by Oguri for the purpose of limiting the reflected light beam within the required exposure area as suggested by Oguri.

With respect to claims 10-11 and 20-23, Ishikawa also fails to teach tilting the first and second mirrors by varying an angle of reflection of the first and second light beam by less than 10 degrees.

Oguri teaches the first and second optical deflection mirrors (2a and 2b) being tilted by an angle of $\theta \leq 4.285$ degrees for the screen aspect ratio of 16:9, and thus the angle of reflection of both the first and second reflected light becomes $2\theta \leq 8.57$ degrees (English translation [0023]) (Fig. 2).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to tilt the first and second mirrors in the device of Ishikawa

to vary the reflection of both the first and second reflected light beams by less than 10 degrees as taught by Oguri for the purpose of limiting the reflected light beam within the required exposure area in the height direction as suggested by Oguri.

With regard to claims 8-9, Ishikawa discloses the first and second mirrors (52 an 54) scan the laser beam LM in the X and Y directions and the workpiece W being disposed flat on a horizontal plane. It is clear that the printing by the second reflected beam would be in a vertical and a horizontal direction if the object were disposed vertically with respect to the second reflected beam. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to appropriately arrange the object to be printed with respect to the incident exposure beam so as to have the exposure beam to scan horizontally and vertically, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

With regard to claim 12, Ishikawa further teaches the second reflected light beam is configured to alter an optical characteristic of a spot on the object (col. 1, lines 15-23).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of Oguri, as applied to claim 1 above, and further in view of Woelki et al. (U.S. 5,329,090).

Ishikawa, as modified by Oguri, discloses all the basic limitations of the claimed invention except for the print pixel on the object comprising a plurality of spots.

Woelki et al. discloses a laser marking device for printing alphanumeric or bar-code characters on a silicon wafer, each character is formed of a plurality of pixels (macrogrids 60), each pixel comprising a plurality of dots (or dimples 57) (Fig. 6).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to print pixel on the object comprising a plurality of spots in the device of Ishikawa as taught by Woelki et al. The motivation for doing so would have been to produce easily readable marking on the object as suggested by Woelki et al. at col. 3, lines 24-27.

Response to Arguments

6. Applicant's arguments with respect to claims 1-12 and 17-23 have been considered but are moot in view of the new grounds of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hai Pham

HAI PHAM
PRIMARY EXAMINER
March 8, 2007